

REINZ-Dichtungs-GmbH
047P 0951

Claims

5

1. A bipolar plate (1) for fuel cell stacks (2) which comprises two outer surfaces (3a, 3b) electrically connected to one another, for the electrical contacting as well as for the discharge and supply of gases and/or fluids to surfaces (5) of fuel cells, said surfaces being adjacent to the outer surfaces, characterised in that the bipolar plate comprises a frame (7) which is open in the central region (6) as well as an inner part (3) arranged in the central region, wherein the frame and the inner part are elastically coupled to one another.
2. A bipolar plate according to claim 1, characterised in that the inner part (3) and the frame (7) are connected by an elastic element (8) belonging to the bipolar plate.
3. A bipolar plate according to claim 2, characterised in that the elastic element is designed as an elastomer peripheral [injection] moulding (8') of the frame and/or inner part (Fig. 2a)
4. A bipolar plate according to claim 2, characterised in that the elastic element is bonded (glued) to the inner part and/or to the frame or is connected to the inner part and/or frame with a positive fit.
5. A bipolar plate according to one of the preceding claims, characterised in that the frame (7) is provided with seals (9) for a fluid-tight closure to adjacent components.
6. A bipolar plate according to one of the preceding claims, characterised in that the frame (7) comprises passage openings

(10a, 10b, 10c) for gases and/or fluids, as well as fastening means.

7. A bipolar plate according to claim 6, characterised in that the passage openings (10a, 10b) of the frame (7) are open towards the central region (6).

8. A bipolar plate according to one of the preceding claims, characterised in that the inner part (3) comprises a hollow inner space and this may be connected to at least one passage opening (10b) of the frame

9. A bipolar plate according to one of the preceding claims, characterised in that the frame (7) is of plastic.

10. A bipolar plate according to one of the preceding claims, characterised in that the frame (7) is of an elastomer material.

11. A bipolar plate according to one of the preceding claims, characterised in that the inner part (3) is of metal, graphite or graphite composite or is coated with a metal layer or consists of a conductive plastic.

12. A bipolar plate according to one of the preceding claims, characterised in that the inner part comprises an embossed flowfield (11) for a large-surfaced gas distribution, on an outer surface (3a) of the inner part (3).

13. A bipolar plate according to one of the preceding claims, characterised in that the frame (7) towards the central region (6) peripherally comprises a bordering (enclosure) (12) for holding the inner part (3) or the elastic element.

14. A fuel cell stack which in an axial layering between individual fuel cells contains bipolar plates according to one of the claims 1-13, characterised in that the fuel cell stack for the central region (6) and the region (13) of the frame comprises means for the axial compression of the fuel cell stack

and/or means for the separate axial compression of the fuel cell stack.

15. A fuel cell stack according to claim 14, characterised in that the compression means are clamping bolts, clamping strips, non-plane end-plates and/or bipolar plates, hydraulic compression means or clamping yokes.